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IPPS European Exchange 2017

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INTRODUCTION

As a young faculty member at North Carolina State University, IPPS has always been a valuable resource for me to see the concepts that I teach on campus applied in a real-world setting. It is one thing to discuss plant propagation in a lecture and to practice the techniques in a laboratory classroom—it is another to see those techniques and principles at work in the industry and hear them discussed by professionals who have been using them years to run their businesses. I have always appreciated the perspective that the annual conference for the IPPS-Southern Region of North America (IPPS-SRNA) allows me to gain. In July 2017, I had an amazing opportunity to broaden the scope of my knowledge of our industry even farther. I participated in the IPPS-SRNA Early Career Exchange Program with the European Region, which allowed me to tour sites of interest in England, Belgium, and Holland - as well as attend the European Region annual conference.

One of my mentors in the department of Horticultural Science at NC State once told me that if you can get one good photo to use for class on a trip, then that is all you need to make that trip worth the cost. According to that principle, the number of photos, videos, and relevant information for the classes that I teach made this trip invaluable for me. I have had many excellent resources of this nature passed down to me from retired faculty members at NC State. But to have content that I personally have gathered, and stories that I can tell students about the concepts we are learning that I have experienced - makes my lectures more meaningful to the students in my classes.

ENGLAND

My trip began in England, where after experiencing rather stringent questioning by customs, I made my way through Gatwick airport and boarded a train towards West Dean Gardens in West Sussex. On my arrival, I was awed by the history behind the gardens

there—this one having existed on site since 1622. I was both captivated by and envious of the lush, thriving plant life after watching the water and heat stressed gardens of home succumb to the climate of eastern North Carolina in July. A highlight of this garden for me was seeing their partially underground glass cold frames where they overwintered tropical and annuals (Figure 1).

Figure 1. A cold frame containing annuals at West Dean Gardens in England.

BELGIUM

The next day, our group boarded the ferry in Calais to cross over into Belgium and continue our tour. Perhaps one of the most impressive stops of the whole trip was the Solitair Nursery, which specializes in large specimen trees. This nursery was reminiscent of an art gallery, with each of their trees displayed as a masterpiece to be considered for purchase (Figures 2 and 3).

Figure 2. Rows of trees and shrubs on display at Solitair Nursery.

Figure 3. IPPS members admiring trees at Solitair.

I was amazed that trees of this size could be successfully moved (Fig 4). I learned that years of careful irrigation and root pruning were involved in preparing the trees for eventually being transplanted.

Figure 4. I stand in front of a ball and burlapped tree at Solitair for scale.

I also noticed at Solitair what a theme for the rest of the trip would be—the entire nursery was immaculate. There was not a single weed to be seen, the boxwoods were completely free of blight, and even the buildings where equipment and machinery was stored gleamed with the obvious care that been taken to keep everything clean and orderly.

HOLLAND

Just down the road from Solitair but across the border into Holland was one of my personal favorite nurseries from the trip, Piet Vergeldt Boomkwekerij. This family-owned nursery produces around 100,000 grafted trees a year with only the five members of the family doing the grafting. In addition to a number of unique conifers, this nursery also specialized in grafting Japanese maples, magnolias, and crabapples (Figure 5).

Figure 5. Japanese maples at Piet Vergeldt Boomkwekerij.

While observing their field-grafted trees, I noticed with surprise that the leaves and branches of the rootstocks were being left on the plants long after the graft union had healed (Figures 6 and 7). When I asked about the reason for this practice, I learned that it assisted in making sure the rootstock trunks of the graft plants grew sufficiently in girth to support the scion growth. In my classes at NC State, we have experienced a problem with a similar graft that we perform with the rootstocks not being thick enough to support the vigorously growing scions. I am eager to apply Piet Vergeldt Boomkwekerij's solution to this class activity and see the results.

Figure 6. Grafted trees in the field with rootstock branches still growing.

Figure 7. A witch's broom on a conifer at Piet Vergeldt Boomkwekerij, and a photo of a miniature conifer grafted from that witch's broom.

From Piet Vergeldt Boomkwekerij, our group made a stop at Delta Works to see the Maeslantkering storm surge barrier. In 1953, a massive flood from the North Sea in Holland resulted in such a high death toll and loss of agricultural land, crops, and livestock. Hence, the Delta Works project was implemented to find and engineering solution that would prevent such a catastrophe from happening again. Our tour guides informed us that the massive gates of Maeslantkering are made up of an amount of steel equivalent to four Eiffel Towers (Figure 8). Holland has 20% of its land below sea level and 50% of it no more than three feet above sea level. As someone who was born and grew up in eastern North Carolina, specifically in an area frequently hit hard by flooding resulting from hurricanes, I was very interested in how the Dutch have addressed this issue. I hope to one day see solutions like this at work in my own home state, rather than the heartbreaking destruction and rebuilding from scratch that seems to happen again and again.

Figure 8. The Maeslantkering storm surge barrier.

The scale of the horticultural industry in Holland continued to amaze me for the duration of the trip. I watched mile upon mile of state-of-the-art glasshouses pass by my window as I rode the tour bus between stops. Each stop showed me plants in greater quantities than I had ever seen before, and those plants were always of the highest quality. In eastern North Carolina, Venus flytraps are native. At Corn.BAK nursery in Holland, there are more Venus flytraps in their greenhouses than probably in my whole state (Figure 9)!

Figure 9. A greenhouse full of Venus flytraps at Corn.BAK.

In North Carolina, roses and lilacs struggle to thrive in the heat and humidity. At the nursery we visited that markets the "Parfume of Nature" line of plants - the roses and lilacs saturated the air with their fragrances. And I saw species and cultivars that I never even knew existed. It would be impossible to describe with words or even capture in pictures the scale of the cut flower industry on display at Aalsmeer Flower Market (Figure 10). Flowers from all over the world are stored in the world's largest refrigerator during the auction and conveyed through the most complicated system of human and machine transport to buyers from all over the world.

Additionally, this trip allowed me to see the most modern nursery and propagation technologies right next to the some of the oldest roots of the horticulture industry. At Deliflor Chrysanthemum, I watched a robot sticking cuttings right next to a room of women doing the same task (Figure 11).

Figure 10. Carts of flowers being transferred for pickup by buyers on the floor of Aalsmeer Flower Market.

Figure 11. A robot and women workers sticking cuttings at Deliflor Chrysanthemum.

Our hosts described the pros and cons of each system—the women were faster than the robot, but the robot could work longer hours. Once the chrysanthemum cuttings were stuck, they were not touched by human hands again. I even witnessed the young plants being placed on their own small train to transport them out to their place in the greenhouses. This nursery, which was the most technologically advanced I had ever witnessed, was less than an hour away from the historic nursery district of Boskoop.

At Boskoop, I was astonished to see nurseries placed directly along bodies of water without fear of flooding as I toured by boat (Figure 12). This area has been involved in nursery production since 1222!

Figure 12. One of the many nurseries of the Boskoop District.

There was even a museum dedicated to the nursery industry (Figure 13). This museum and the Boskoop district as a whole stood out to me as a contrast to the United States. Horticulture in Holland is such an integral and highly visible part of their history, culture, and economy.

Figure 13. Traditional Dutch clog style work boots at the tree nursery museum in Boskoop.

At home, and especially in the university, we are constantly discussing how to increase the visibility and awareness of horticulture in a place where many people are not even aware of its existence.

A GREAT OPPORTUNITY

As with all IPPS trips, though, it would be a mistake to only focus on the plants. The experiences and conversations that I shared with IPPS members from all over the world made this experience truly memorable. I was able to strengthen relationships with members from my own region and to make new ones with members from regions in Europe, Australia, and New Zealand. I made new friends who I will look forward to seeing throughout the years to come - as we "seek and share" together in this amazing industry. I am extremely grateful for my experiences with the IPPS-SRNA Early-Career Exchange Program, and I will be sure to recommend it to my students and other young professionals.